

Efficient High-drop Channel-Drop Filters with Photonic Crystal Slabs

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In-plane channel-drop optical filters (CDFs), which are based on 2-D photonic crystal (PCs) slabs, are effective in wavelength division multiplexing for photonic networks. We have developed an efficient high-drop CDF using PC slabs, and we confirmed the CDF's operation at a wavelength around 1600 nm.

We fabricated a PC-slab CDF with a hexagonal-lattice air hole and a silicon-on-insulator substrate (Fig. 1). It had a single defect cavity and a hetero-interface as a highly reflective interface. The spectrum from the drop-port showed a sharp peak at 1600 nm. The peak power ratio of the drop-port to the through-port was greater than 95%, and the drop bandwidth at a full-width at half maximum was 1.5 nm.

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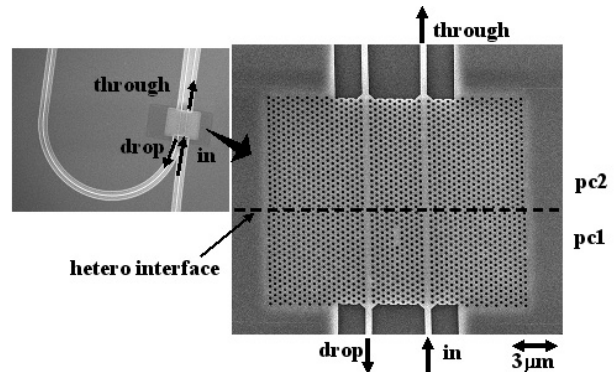


Fig. 1 SEM images of CDF device